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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,853	01/02/2002	Thomas Potter	SCHO0065	1468
22862	7590	03/17/2006	EXAMINER	
GLENN PATENT GROUP 3475 EDISON WAY, SUITE L MENLO PARK, CA 94025			HAN, QI	
			ART UNIT	PAPER NUMBER
			2654	

DATE MAILED: 03/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/936,853	POTTER, THOMAS	
	Examiner	Art Unit	
	Qi Han	2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Response to Amendment

2. This communication is responsive to the applicant's amendment dated 01/06/2006.
Applicant amended claims 1-5, 7-8, 10-28.

The examiner withdraws the disclosure objection regarding the abstract and content error on page 11 of the specification, because the applicant made amendment (see the amendment: files of ABST and REM (last page), dated 01/06/2006).

The examiner withdraws the claim rejection under 35 USC 112 1st and 2nd in the previous office action, because the applicant amended the claims (see the amendment: pages 4, 6-7).

Response to Arguments

3. Applicant's arguments filed on 01/06/2006 with respect to the rejection of claims 1-28 under 35 USC 103 have been fully considered but they are not persuasive. It is noted that even though the amended claims introduce new issue(s) or change the scope of the claims, the previous cited references are still applicable for the amended claim rejection, which made certain changes for the purpose of reflecting the amend claims (see detail below).

In response to applicant's arguments with respect to claim 1 (also related to claims 20 and 25-16) that “Bender (prior art) does not disclose that the processor for determining a plurality of formulation alternatives varies the order of the text components of a sentence having exactly one predicate”, “the second alternative ...that synonyms are ascertained and that, then, the order of the synonyms is varied” , “the third alternative...” and “changing the order of components within the main sentence or the secondary sentence”, and the related other arguments that “examiner is mistaken when stating...that Bender discloses several different methods individually and refers to “formulations”, because...bender is completely silent on varying the order of components within a single sentence” (the amendment: pages 14-18), the examiner respectfully disagrees with applicant and has a different view of the prior art teachings and the claim interpretations.

It is noted that the claimed limitation “to determine the plurality of formulation alternatives by varying the order..., by ascertaining synonyms..., or by ascertaining synonyms ... and varying the order...” can be broadly interpreted in the manner that when one of the existing alternatives in the prior art can be applied, it satisfies the claimed limitation. In another words, the recited limitation is not interpreted as a Markush-type claim, because the applicant appears not to intend to claim so.

It is also noted that by broadest reasonably interpretation of the claimed limitation(s), Bender discloses claimed “varying the order of the text components” in his syntactic method (interpreted as formulation alternative) (page 334, the bridge paragraph between left and right columns), “ascertaining synonyms” in his semantic method (page 334, right col., paragraphs 2-3), and “these methods (syntactic methods including “varying the order of the text components” and semantic methods including “ascertaining synonyms”) can be applied in parallel (interpreted

Art Unit: 2654

as including combination of “varying the order” and “ascertaining synonyms” for the structure of the text), which are properly read on the claimed limitation.

Further, it should be pointed out that for the claimed limitations the examiner has different interpretation and understanding from the applicant’s argument or opinion, which not necessarily means that the examiner or the applicant is wrong or mistaken. However, it is reminded that the claims are given the broadest reasonable interpretation by the examiner, in light of the specification, but not read it into the specification, so that the claimed invention must be patentably distinguishable from the teachings of the recited prior art based on the broadest reasonable interpretation the claims. For example, the Bender’s disclosure “changing ...structure of text...” and his example of changing the order of the sentence (Bender: page 334, the bridge paragraph between the left and right columns) is properly read on the claimed “varying the order of the text components itself” (claim 1) and the argued “varies the order of the text components of a sentence of a sentence having exactly one predicate” (the amendment: page 15, lines 3-5, page 16, paragraph 6 to page 17, paragraph 1). For another example, the Bender’s different methods (including syntactic methods (necessarily being grammatically correct) and semantic methods) and their combination for data hiding in text (Bender: page 332, the bridge paragraph between the left and right column; page 333, right column, paragraph 2; and page 334) are properly read on the claimed and argued “formulations” (or “formulation alternatives”) and “every formulation alternatives is grammatically correct for the text and has essentially the seam meaning” (claim 1 and the amendment: page 18, paragraphs 3-4). For further example, Bender’s example about changing the order of text of the sentence (Bender: page 334, the bridge paragraph between the left and right columns) implies the encoding 1 bit of information for the

Art Unit: 2654

order change (otherwise no need for changing the order at all), which is properly read on the claimed or argued “specific partial information allocated” (claim 1 and the amendment: page 17, paragraphs 5-6).

For above reason, the prior art teachings cover all claimed limitations and the rejection is believed proper (see detail in the claim rejection below).

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

4. Claims 1-24 and 27-28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claim 1, the new amended claim limitations “an analyzer...”, “a processor...”, “a selector...”, and “an output interface...” introduce new subject matter, which are not structurally described and/or specifically supported by the original specification.

Regarding claim 20, the new amended claim limitations “an analyzer...”, “a producer...”, “a combiner...”, and “an output interface...” introduce new subject matter, which are not structurally described and/or specifically supported by the original specification.

Regarding claims 2-19, 21-24 and 27-28, the rejection is based on the same reason described for claim 1 or 20, because the dependent claims inherit all limitations of their parent claim(s).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

5. Claims 1, 3-4, 9-10, 12-13, 15, 18-20 and 23-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over BENDER et al. (IDS: "Techniques for data hiding", IBM systems Journal. VOL 35 NOS 3&4. 1996) hereinafter referenced as BENDER.

As per **claim 1**, as best understood in view of claim rejection under 35 USC 112 1st (see above), BENDER discloses techniques for data hiding (title), comprising:

"an analyzer for linguistically analyzing the text to produce text components, the text components being components of the sentence and the sentence, in addition to at least one additional component, having exactly one predicate as component" (page 332, left col., paragraph 2, 'data hiding in text', 'soft-copy text', 'text file'; page 332, right col., paragraph 1; a 'syntactic (linguistically analyzing) methods that utilize punctuation, and semantic (linguistically analyzing) methods that encode using manipulation of the words themselves'; page 334, right col., paragraphs 1-3, 'the sentence' (including one predicate as component) and 'the word (component)', wherein the mechanism for implementing above method or process is interpreted as analyzer);

"a processor for determining a plurality of formulation alternatives for the text, wherein the processor is operative to determine the plurality of formulation alternatives by varying the order of the text components it-self, by ascertaining synonyms for the text components and varying the order of the synonyms for the text components, **or** by ascertaining synonyms for at

Art Unit: 2654

least one text component and varying the order of a synonym for the at least one text component and of another text component of the sentence” (page 334, left col., paragraph 3 to right col., paragraph 3, ‘changing the diction and structure of text (varying the order of the text)’, ‘assign two synonyms primary or secondary value’; page 333, right col., paragraph 3, ‘these methods (syntactic and semantic methods) can be applied in parallel (interpreted as operation of AND or combination of the different methods), wherein different methods are read on formulation alternatives and wherein the mechanism for implementing above method(s) or process is interpreted as processor),

“wherein the plurality of formulation alternatives are such that every formulation alternative is grammatically correct for the text and has essentially the same meaning as the text, and that every order of text components and every synonym ascertained has specific partial information allocated thereto”, (page 334, left col., paragraph 1 to right col., paragraph 3, ‘both considered correct usage of commas in a list’ and ‘alternation...can represent binary data (partial information)’, ‘changing the diction and structure of text without significantly altering meaning or tone’, ‘the choice (between synonyms)...represents two bits of data (partial information)’),

“an output interface for outputting a selected formulation [alternative] forming a modified text, with said information being hidden in said modified text”, (page 334, left col., paragraph 1 and right col., paragraphs 1-2, wherein the mechanism for implementing above step or process is interpreted as an output interface).

But, BENDER does not expressly disclose “a selector for **selecting a formulation alternative** from the plurality of formulation alternatives in such a manner that the partial information that is allocated to the selected formulation alternative corresponds at least to part of

the information to be hidden”. However, BENDER discloses different methods (formulations, or formulation alternatives) individually as stated above, and further teaches that ‘**in addition**, the use of syntactic and semantic methods generally does not interfere with the open space mothers’ and ‘these methods can be applied in parallel’ (page 333, right col., paragraph 3), which means the methods can be applied individually (alternatively) and in combination, based on user preferred selection, as long as no interference, wherein the mechanism for determination of a method or combination of certain methods is interpreted as a selector. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify BENDER by specifically providing selecting alternatives including a individual method and possible combination of methods (corresponding to formulation alternatives) without interference, for the purpose of providing robust reformatted document with hidden data (BENDER: page 333, right col., paragraph 3).

As per **claim 3**(depending on claim 1), BENDER further discloses “a dictionary/grammar stage such that grammatically correct formulation alternatives are provided”, (page 334, left col., paragraph 1 to right col., paragraph 3, ‘both considered (grammatically) correct usage of commas in a list’ and ‘synonym tables (corresponding to dictionary)’).

As per **claim 4** (depending on claim 1), BENDER further discloses “the dictionary/grammar stage has stored therein synonyms for text components as well unequivocal partial information for each synonym, the partial information including at least one of syntactic, semantic, contextual and statistic information”, (page 334, right col., paragraphs 2-3, ‘synonym tables (stored synonyms)’, ‘the choice ... presents two bits of data (unequivocal partial information)’ that is necessarily stored for encoding/decoding).

As per **claim 9** (depending on claim 1), BENDER further discloses “each text component comprises at least one word, and wherein the synonyms for each word are stored in the dictionary/grammar stage together with the corresponding partial information, whereas the partial information for each different sequence of text components is predetermined in accordance with modeling of real linguistic laws by declarative rules, constraints or fixed implementations in software”, (page 334, left col., paragraphs 1-3 to right col., paragraphs 1-3, page 334, left col., paragraph 3 to right col., paragraph 3, ‘both considered correct usage of commas’, ‘changing the diction and structure of text without significantly altering meaning or tone’, ‘the choice (between specific synonyms)... represents two bits of data (partial information)’; which read on the claimed “predetermined in accordance with modeling of real linguistic by declarative rules, laws, constraints, or fixed implementations in software”).

As per **claim 10** (depending on claim 9), BENDER further discloses “to utilize a first section of the information to be hidden for the selection of the sequence of the text components and the subsequent sections for the selection of the synonyms, and wherein the sequence of the selected synonyms is a sequence selected from one or several linguistically possible sequences and is independent of the sequence of the text components in the text”, (page 334, right col., paragraphs 1-3, wherein change of the position of the “before” phrase in the sentence reads on the first section, and the ‘two bits of data’ of synonym choice (selection) read on the subsequent sections).

As per **claim 12** (depending on claim 1), BENDER further discloses “to deliver no text components for which the correctness of the reformulation cannot be guaranteed and/or wherein the processor is arranged to offer only such formulation alternatives for which it is ensured that

Art Unit: 2654

the analysis thereof can yield again the same sentence of formulation alternatives”, (page 334, right col., paragraphs 2-3, BENDER teaches not using ambiguity of form, and discloses the meaning interference problems for choice of the synonyms, which suggests not using an ambiguous text component for hiding data, as claimed).

As per **claim 13** (depending on claim 1), the rejection is based on the same reason described for claim 1, because the rejection for claim 1 covers the same or similar limitations as claim 13, wherein the text in BENDER is applicable to “public text” and the data hiding (hidden) in the text read on “secret data”.

As per **claim 18** (depending on claim 1), BENDER further discloses “dynamically determine the formulation alternatives and to dynamically produce the partial information allocated to each formulation alternative”, (page 334, right col., paragraph 3, ‘to automatically generate synonym table (dynamically determine synonym alternatives)’, ‘where there are many synonyms ...can be encoded per substitution’).

As per **claim 19** (depending on claim 1), the rejection is based on the same reason described for claim 1, because the rejection for claim 1 covers the same or similar limitations as claim 19.

As per **claim 20**, it recites apparatus (device) for extracting information hidden in a modified text. The rejection is based on the same reason described for claim 1, because the claim recites the same or similar limitations with reversed operation of claim 1.

As per **claim 23** (depending on claim 20), the rejection is based on the same reason described for claim 105, because the claim recites the same or similar limitations as claim 10.

Art Unit: 2654

As per **claim 24** (depending on claim 20), the rejection is based on the same reason described for claims 3 and 9, because the claim recites the same or similar limitations as claims 3 and 9.

As per **claim 25**, it recites a method. The rejection is based on the same reason described for claim 1, because the claim recites the same or similar limitations as claim 1.

As per **claim 26**, it recites a method. The rejection is based on the same reason described for claim 20, because the claim recites the same or similar limitations as claim 20.

6. Claim 2 is are rejected under 35 U.S.C. 103(a) as being unpatentable over BENDER in view of admitted prior art hereinafter referenced as Admission.

As per **claim 2** (depending on claim 1), even though BENDER's disclosure necessarily includes a parser for analyzing syntactic and/or semantic (linguistic) structure of a text (sentence), BENDER does not expressly disclose the parser being "a highly lexicalized, unification-based parser and specifically an HPSG parser". However, the feature is well known in the art evidenced by Admission, who indicates that "the standard work for realizing the same" is disclosed by Pollard and Sag (specification: page 77, paragraph 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify BENDER by specifically providing a parser that realizes the same work as HPSG parser, as taught by Admission, for the purpose of increasing robustness for the methods of data hiding in text (BENDER: page 333, right col., paragraph 3).

Art Unit: 2654

7. Claims 5-8, 11, 14-15 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over BENDER in view of WAYNER (IDS: "Disappearing Cryptograph, ISBN 0-12-738671-8, May 1996).

As per **claims 5** (depending on claim 1), BENDER does not expressly disclose "each sequence of the text components and each synonym ascertained has a weighting allocated thereto as partial information, said weighting being determined such that all weightings for the sequence and the synonyms together, respectively, yield a probability of 1, and wherein the selector is arranged to select one formulation alternative each in accordance with the rules of arithmetic decoding, controlled by the secret data that are understood as coded data." However, the feature is well known in the art as evidenced by WAYNER who, in the same field of endeavor, discloses Disappearing Cryptograph (Book title), comprising using 'Huffman trees (each tree necessarily includes total weightings of all paths being probability of 1-- the nature of Huffman coding)', 'the weightings are used to build a tree', and 'converted into 2^i different choices each with equal weighting' (page 104, paragraphs 1-3, and Fig. 7.3); and 'these rules (corresponding to rules of arithmetic decoding) can be expanded arbitrarily' (page 117, paragraph 2); and 'a Huffman tree that converts bits into productions' for different variables (Figs. 7.4-7.6), which read on the claim). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify BENDER by specifically providing Huffman tree (coding) with weightings for the different possible choices and the corresponding rules for text parsing, as taught by WAYNER, for the purpose of offering optimal way to compress and/or encode information (WAYNER: page 104, paragraph 1).

As per **claim 6** (depending on claim 1), the rejection is based on the same reason described for claim 5, because the rejection for claim 5 covers the same or similar limitations as claim 6, wherein 'Huffman tree' in WAYNER is corresponding to Huffman code words.

As per **claim 7** (depending on claim 5), BENDER in view of WAYNER further discloses "the information to be hidden comprises a bit sequence, wherein the selector is arranged to take as many bits from the beginning of the bit sequence until the number constituted by these bits is unequivocally within a specific one of the probability intervals determined by said weightings, whereupon said selector selects that formulation alternative that corresponds to the weighting allocated to the specific probability interval, whereupon said selector carries out additional interval interleaving in order to select the next formulation alternative" (BENDER: page 334, left col., paragraph 1 to right col., paragraph 3, 'two bit of data (a bit sequence)'; WAYNER: page 94, paragraph 3, 'the bits were hidden'; page 104, paragraph 2, 'Huffman tree ...approximates the desired statistical outcome (corresponding to probability)', wherein each branch of the tree necessarily associated with a probability interval when the weightings is determined; 115, Fig. 7.5, shows different variables related to a Huffman tree (interpreted as additional interval interleaving); page 118, paragraph 3, 'grammar-based mimic functions' 'measured probabilistically').

As per **claim 8** (depending on claim 1), the rejection is based on the same reason described for claim 6, because the rejection for claim 6 covers the same or similar limitations as claim 8.

As per **claim 11** (depending on claim 1), the rejection is based on the same reason described for claim 6, because the rejection for claim 6 covers the same or similar limitations as

Art Unit: 2654

claim 11, wherein Huffman tree (and the corresponding coding) is also for compressing the information.

As per **claim 14** (depending on claim 13), the rejection is based on the same reason described for claim 6, because the rejection for claim 6 covers the same or similar limitations as claim 11, wherein Huffman tree (and the corresponding Huffman coding) is also for compressing the information and using statistical characteristics of the analyzed text (public text) is an inherent nature of Huffman coding.

As per **claim 15** (depending on claim 1), the rejection is based on the same reason described for claim 7, because the rejection for claim 7 covers the same or similar limitations as claim 15.

As per **claim 21** (depending on claim 20), the rejection is based on the same reason described for claim 5, because the claim recites the same or similar limitations as claim 5.

As per **claim 22** (depending on claim 20), the rejection is based on the same reason described for claim 6, because the claim recites the same or similar limitations as claim 6.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the

Art Unit: 2654

THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qi Han whose telephone numbers is (571) 272-7604. The examiner can normally be reached on Monday through Thursday from 9:00 a.m. to 7:00 p.m. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richmond Dorvil, can be reached on (571) 272-7602.

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QH/qh
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